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14. ABSTRACT
The primary goal of this project was to address the role of contextual factors on prostate cancer risk and survival by pooling data from two prostate cancer case-control studies and geospatial data on social and built environment contextual factors. The results showed that ngibhrohood socioeconomic status (SES) accounted for disparities in survival/mortality between Blacks and non-Hispanic Whites. Patient's education only partially accounted for the survival disparity. Neighborhood SES was itself independently associated with survival/mortality after prostate cancer diagnosis. The results also showed more than two-fold increased risk of localized and advanced disease associated with increasing levels of neighborhood SES. For localized disease, this association was largely explained by prostate cancer risk factors as well as certain neighborhood characteristics, specifically population density, crowding, and residential mobility. Neighborhoods that are more dense (more per capita residents), have more crowded households (household occupants), and have less population mobility are associated with lower prostate cancer risk. For advanced disease, the association with neighborhood SES was not explained by any available individual or neighborhood factors. These results indicate that additional research targeted to understanding the factors and mechanisms underpinning the neighborhood socioeconomic status associations with risk and survival, may help inform future interventions to ameliorate disparities particularly higher risk and mortality of disease among Blacks.

15. SUBJECT TERMS
Prostate, neighborhood, contextual, disparities, race/ethnicity

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INTRODUCTION

The objective of this project was to address the hypotheses that: a) individual-level factors act jointly with the contextual-level social, built, medical access, and immigration environments to influence prostate cancer survival and risk within racial/ethnic groups, and b) these effects contribute to socioeconomic (SES) and racial/ethnic disparities in prostate cancer survival and risk. The primary goal was to address the role of contextual factors on racial/ethnic and SES disparities in survival after prostate cancer diagnosis.

1. For survival after prostate cancer diagnosis, the specific aims were to:
   a. Quantify the independent and joint effects of individual-level education and contextual-level SES on prostate cancer-specific survival and overall survival within racial/ethnic groups, and the extent to which behavioral and established prognostic factors contribute to these effects.
   b. Examine the extent to which individual-level education and contextual-level SES explain racial/ethnic variation in prostate cancer-specific and overall survival.
   c. Quantify the independent and joint effects of individual- and contextual-level immigration and acculturation factors on prostate cancer-specific and overall survival in Hispanic men, and the extent to which behavioral and established prognostic factors contribute to these effects.

2. For prostate cancer risk, the specific aim was to explore the independent and joint effects of individual-level education and contextual-level SES on prostate cancer risk within racial/ethnic groups.

BODY

Statement of Work

The statement of work and associated report of progress is shown below. The timeline was expanded to incorporate an approved 9-month no-cost extension.

Task 1. Study and data set-up.
1a. Obtain IRB approvals (months 1-6)
1b. Determine interview data comparability and compute derived variables (months 1-6)
1c. Clean addresses of cases and controls (months 1-3)
1d. Transmit data to Cockburn USC lab for geocoding (months 4-6)
1e. Prepare contextual data (months 1-6)
- prepare existing social and built environment datasets
- collect business and destinations data
- collect medical facilities data
  - collect OSHPD hospital utilization data, create bed size and ownership variables
  - compute % race/ethnicity in each hospital, based on registry data

1f. Append interview data to contextual data (months 7-9)
1g. Compute distance and travel time to facilities in GIS (months 10-12)
1h. Compute distance buffers in GIS for determining distance to businesses (months 10-12)
1g. Merge case data to CCR data to obtain most updated follow-up information (months 10-12)
Deliverables: Multilevel datasets for conducting analyses relevant to specific aims.

This task was completed as planned. Residential addresses of cases and controls were geocoded by Dr. Cockburn and linked to neighborhood social and built environment characteristics from the California Neighborhoods Data System (CNDS), as described below.

California Neighborhoods Data System: Neighborhoods were defined as the census block group for most of the social and built environment measures, shown in the Table below. Businesses, parks, and farmers markets were assessed at 1600m (approximately 1 mile) buffers, and traffic density was assessed at 500m. The block group unit comprising an average of 1,500 residents (ranging between 600 and 3,000 residents) and is a more homogenous level that better represents communities or neighborhoods through which individuals participate in health behaviors, access services and receive health care, than the commonly used census tract.

As diagnosis and interview years for cases and controls spanned 1997-2003, we used neighborhood data anchored around the 2000 decennial Census.

Summary of Social and Built Environment Data and Measures used in the Study

Contextual Data	Data Source	Description of measure
Socioeconomic status	US Census 2000 long form data (1)	Block-level composite measure for income, education, poverty, employment, occupation, housing and rent values (2)
Racial/ethnic composition	US Census 2000 short form data	Block-level measures of % of each racial/ethnic group
Ethnic enclave, immigration/acculturation characteristics	US Census 2000 long form data	Block-level measures of residential composition on % foreign-born, recency of immigration, linguistic isolation; multi-component index of Hispanic ethnic enclave (based on the concept of an ethnic enclave as a geographic unit with higher percentages of foreign-born ethnicity-specific residents and non-English language usage), comprising block-group-level data on linguistic isolation, English fluency, Spanish language use, Hispanic ethnicity, immigration history, and nativity (3)
Racial/ethnic residential segregation	US Census 2000 short form data	Measures of degree of segregation in a city or metropolitan area
Population density	US Census 2000 short form data	Block-level measures of population size per sq mile
Urbanity (Rural/Urban)	US Census 2000 short form data	Composite measure based on census defined urbanized area, population size and population density
Housing	US Census 2000 long form data	Block-level measures of household crowding, % of single family and multi-unit structures, % renters
Businesses	Dunn & Bradstreet business listings, via Walls & Associates (4)	Measures of total businesses, density/proximity to types of businesses, retail food, recreational facilities
Commuting	US Census 2000 long form data	Block-level measures of proportion of population who walk, bike, or drive to work
Street connectivity	NAVTEQ (5)	Block-level measures of relative lengths of blocks and numbers of intersections, as measures of walkability
Parks	NAVTEQ (5)	Locations of parks
Farmers Markets	California Department of Food and Agriculture (6)	Locations of certified farmers markets
Traffic density	California Department of Transportation (7)	Measures of volume of traffic within 500m radius of residence (8-10)

References cited in table:

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9. California Department of Transportation. Highway Performance and Monitoring System. 2004.
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We were not able to link hospitals for cancer patients via their California Cancer Registry (CCR) hospital numbers to utilization data in the OSPHD database because CCR discontinued the use of OSPHD hospital ID numbers. Thus, we derived our own hospital-level variables that we have used in other research and which have been shown to be predictive of a number of cancer outcomes. These variables are: racial/ethnic composition based on race/ethnicity of cancer patients in a given hospital, SES distribution based on neighborhood SES of cancer patients in a given hospital, and NCI-cancer center designation.

Table 1a in the Supporting Data section shows the distribution of patient, neighborhood, and hospital characteristics for the cases in the survival analysis dataset, which includes cases from the Northern California and Southern California studies. The built environment variables include population density, total number of businesses, street connectivity (blocks, intersections, street segments), traffic density, commute, restaurant environment, retail food environment, parks, and farmers markets; and the social environment variables include neighborhood SES, housing. In our case series of 1800 prostate cancer cases, 60% (N=1080) were from LA County, and 62% (N=1114) were of advanced stage disease (the studies over-sampled advanced stage cases). With regards to SES, more than one-third (37.2%) had high school or less education, while 34.2% were college graduates. With regards to neighborhood factors, more than one-third (34.7%) of cases lived in the highest statewide quintile using our composite SES index. About half (50.4%) had 1-2 parks and 77.4% had no farmers markets within a one mile radius of their residence. 11% of the cases were seen at an NCI-designated cancer center, and nearly half (48.6%) lived within 5 miles of their hospital, calculated using the greater circle distance method.

The table below shows the distribution of individual-level education and neighborhood SES by study region (LA County and SF Bay Area) and by stage. While the distributions of these SES variables are similar across stage within each region, there are considerable differences in SES among the prostate cancer cases between the two study regions.

Variable	LA County		SF Bay Area	
	Localized prostate cases n (%)	Advanced prostate cases n (%)	Localized prostate cases n (%)	Advanced prostate cases n (%)
Education (case-level)				
High School Degree or Less	213 (43%)	255 (43%)	63 (33%)	138 (26%)
Some College	162 (33%)	159 (27%)	52 (27%)	143 (27%)
College Graduate or Higher	118 (24%)	173 (29%)	78 (40%)	246 (47%)
Neighborhood SES (State Quintile)				
Q1	136 (28%)	125 (21%)	6 (3%)	10 (2%)
Q2	90 (18%)	117 (20%)	21 (11%)	41 (8%)
Q3	93 (19%)	114 (19%)	24 (12%)	53 (10%)
Q4	89 (18%)	107 (18%)	45 (23%)	99 (19%)
Q5	82 (17%)	122 (21%)	97 (50%)	323 (61%)
Missing	3 (1%)	2 (0%)	0 (0%)	1 (0%)

Table 1b shows the distribution of the individual-level immigration factors, and neighborhood-level ethnic enclave among Hispanic prostate cancer cases. In our case series, 65% of the Hispanics, all from the LA County study site, are foreign-born, and of these, 13% immigrated when less than age 20 and 19% at age 40 or older. More than one-third (36.3%) had spent more than half their lives in the US. The sample is heavily skewed towards residence in high ethnic enclave neighborhoods across California, with more than half (55.8%) living in the highest statewide quintile.

Table 2 in the Supporting Data section shows the distribution of patient and neighborhood characteristics for the cases and controls in the case-control analysis dataset. This table includes the prostate cancer cases and controls from the Northern California study only (controls were not included in the case-control analysis because they were selected from the same neighborhood as the Southern California cases).

With regards to SES, both localized and advanced stage cases had slightly lower education than controls, but advanced stage cases had considerably higher proportions living in higher SES neighborhoods than both localized stage cases and controls.

Task 2. Conduct analyses for Aim 1: survival analyses.
2a. Conduct analyses for Aims 1a & 1c (months 13-18)

2b. Conduct analyses for Aim 1b (months 19-24)
2c. Prepare and submit manuscript(s) describing results from Aim 1 (months 19-28)
Deliverables: Completed analyses and manuscript(s) for Specific Aim 1.

This task was completed as planned. The results corresponding to Aims 1a-1c are shown in Tables 3-8. We conducted Cox proportional hazards analysis to examine the independent effects of each neighborhood characteristic on overall and prostate cancer survival, the independent and joint effects of neighborhood SES and case-level education, and the extent to which the neighborhood characteristics accounted for racial/ethnic differences in survival. Because cases were not heavily clustered in neighborhoods, multi-level models (e.g., frailty survival models) would not have been appropriate; we did adjust all models for block-group clustering. We ran sequential models adding in various explanatory variables (behavioral, clinical prognostic, hospital factors) to examine the extent to which these factors accounted for neighborhood associations.

In the overall sample of 1800 cases from Northern and Southern California, there were 557 deaths (30.9%), of which 218 (39.1% of all deaths) were due to prostate cancer.

Table 3 shows the associations of case-level education and neighborhood SES, independently and jointly, with all-cause and prostate cancer-specific survival, adjusting for demographic and clinical characteristics. Cases with lower education (high school or less) was associated with a 46% increased rate of death when compared to cases with higher education (college or higher); this increased death rate was not seen for prostate-specific deaths. We also observed significant associations of lower neighborhood SES with higher mortality (p-trend < .01), with those in the lowest neighborhood SES quintile having 75% higher rate of death than those in the highest SES neighborhood quintile. This pattern of association with also observed for prostate-specific deaths, but the confidence intervals were wider considering the smaller number of events, and only statistically significant when comparing quintile 1 to quintile 5 (hazard ratio (HR) = 1.85 (1.11-3.07)). In a model with both education and neighborhood SES, these associations were generally attenuated but still statistically significant. Finally, in a model that looks at education and neighborhood SES jointly using a combination variable (low education/low neighborhood SES, low education/high neighborhood SES, high education/low neighborhood SES, high education/high neighborhood SES), we found evidence of increased rates of death for all joint categories when compared to high education/high neighborhood SES, for all cause deaths, but statistically increased rate of death for prostate-specific deaths only for the low education/low neighborhood SES category (HR = 1.81 (1.23-2.66)). ***These results support the prognostic importance of both individual-level education and neighborhood SES on survival after prostate cancer.***

Tables 4-7 show the hazard ratios for all-cause deaths associated with race/ethnicity, neighborhood SES, and case-level education, adjusted sequentially for behavioral factors + hospital characteristics (Model 3), restaurant index (Model 4a), retail food environment index 1 (Model 4b: (convenience stores + fast food restaurants)/supermarkets), retail food environment index 2 (Model 4c: (convenience stores + fast food+liquor stores)/supermarkets), retail food environment index 3 (Model 4d: (convenience stores + fast food)/(supermarkets + farmers markets)), and retail food environment index 4 (Model 4e: (convenience stores + fast food + liquor stores)/(supermarkets + farmers markets)). In **Table 4**, Blacks had higher mortality than non-Hispanic Whites (HR = 1.40 (1.15-1.70)) after adjusting for tumor and treatment factors. Adjusting for neighborhood SES reduced this mortality difference to 1.17 (0.94-1.46), and additional adjustment for behavioral factors and hospital patient SES composition further reduced the HR to 1.11 (0.89-1.39). Mortality for Hispanics was similar to non-Hispanic Whites. The higher mortality rates associated with lower neighborhood SES was attenuated somewhat after adjusting for behavioral factors (co-morbidities, BMI, smoking, physical activity) and hospital patient SES composition, and further attenuated after adjusting for the various restaurant and retail food environment measures, but still statistically significant in most SES categories. In **Table 5**, the higher mortality among Blacks was slightly attenuated (HR = 1.26 (1.03-1.55) after adjusting for individual education. The higher mortality for cases with high school or less education was attenuated only slightly with adjustment for behavioral factors, hospital SES, and restaurant and food environment factors (HR from 1.46 to 1.41). In **Table 6**, neighborhood SES and case-level education are included in the same model, and in **Table 7**, they are combined – neighborhood SES x education; in both models, further adjustment for behavioral, hospital, and restaurant and food environment characteristics only partially attenuated the associations seen for neighborhood SES and neighborhood SES x education. ***These***

results show that neighborhood SES completely explained the mortality differential between Blacks and non-Hispanic Whites, while individual-level education partially explained the difference. The associations of neighborhood SES and individual-level education with mortality were only slightly explained by behavioral, hospital, and restaurant and food environment characteristics.

With regards to prostate-specific mortality (data not shown), in our data, Blacks had worse survival, albeit non-significant, than non-Hispanic Whites (HR = 1.20 (0.87-1.64)), after adjusting for tumor and treatment factors. This difference was entirely reduced when adjusting for neighborhood SES in the model (HR = 0.97 (0.68-1.39)). Adjustment for behavioral, hospital, and restaurant and food environment characteristics did not attenuate the significantly higher mortality among cases in the lowest SES quintile relative to the highest SES quintile.

With regards to distance to facilities, as noted earlier, nearly half (48.6%) of cases lived within 5 miles of their hospital, and another 30.8% lived between 5-10 miles. There were only 3 cases who lived 50 miles or more from their hospital, and there were no deaths occurring within this group. As seen from the table below, there are no associations between distance to hospitals and all-cause or prostate cancer-specific mortality. In most literature examining distance, significant effects, if seen, are generally evident for large distances. It is likely that, in our sample, the distances are not large enough allow us to detect a significant effect.

Distance to Hospital	All Cause Death				Prostate Cancer-Specific Death			
	N (deaths)	%	HR	95% CI	N (deaths)	%	HR	95% CI
<5 Miles	252	50.1	1.00		105	50.2	1.00	
5-<10 Miles	151	30.0	0.92	0.76-1.13	63	30.1	0.88	0.65-1.21
10-<15 Miles	57	11.3	1.18	0.86-1.62	29	13.9	1.36	0.86-2.15
15-<50 Miles	43	8.6	0.96	0.70-1.33	12	5.7	0.66	0.35-1.2
50+ Miles	0	0	--	--	0	0	--	--
Continuous			1.00	0.99-1.00			0.99	0.9-1.01

Models adjusted for age, race/ethnicity, study site, hospital clustering, and stratified by stage.

Table 8 shows the associations of individual-level immigration factors (nativity, age at immigration, and percent of life in the US) and neighborhood ethnic enclave with mortality. We conducted analyses with nativity and ethnic enclave together in one model (Model 1), age at migration and ethnic enclave together in one model (Model 2), % of life spent in the U.S. and ethnic enclave together in one model (Model 3), and nativity and enclave as a combination variable (Model 4). Each of the individual-level immigration variables showed lower mortality associated with being foreign-born, older age at migration, and less percentage of life spent in the US. However, residence in a low enclave is associated with lower mortality relative to residence in a high enclave. These associations were relatively unchanged whether the individual-level and neighborhood-level measures were in the same models or not. When nativity and enclave were considered together as a combination variable, we noted that the lower mortality within the low enclaves were only seen among foreign-born cases, although this estimate was based on a very small number of cases (N=31) and deaths (N=3). The addition of additional covariates, including education, neighborhood SES, behavioral factors, hospital characteristics, and retail food environment did not attenuate the significant associations (data not shown).

There were no statistically significant associations seen for any of the immigration factors with prostate cancer-specific mortality, likely due to small numbers of events. (data not shown)

These results show that, among Hispanic prostate cancer cases in LA County, overall mortality after prostate cancer diagnosis was lower among those who are foreign-born, who immigrated at a later age, and/or who spent a lower proportion of life in the US. In addition, overall mortality was lower among Hispanic cases in low enclaves compared with Hispanic cases in high enclaves. These associations were not affected by individual or neighborhood SES, behavioral, hospital, or other neighborhood characteristics.

Task 3. Conduct analyses for Aim 2: case-control risk analyses.
3a. Conduct case-control analyses (months 29-32)
3b. Prepare and submit manuscript describing results from Aim 2 (months 33-36)
Deliverables: Completed analyses and manuscript for Specific Aim 2.

This task was completed as planned. This aim was limited to cases and controls from Northern California given that controls were matched to cases on neighborhoods in Southern California. Thus, due to the limited statistical power due to the smaller sample size, we considered Aim 2 an exploratory aim.

Adjusted odds ratios were computed separately for localized stage and for advanced stage cases. **Table 9** shows the associations of case-level education, neighborhood SES, and social and built environment factors with prostate cancer risk. For both localized and advanced stage, in base models (adjusted only for age, race/ethnicity, and block-group clustering), increasing neighborhood SES is associated with increased risk, however, this association is largely attenuated after adjusting for established prostate cancer risk factors and neighborhood factors, although the association comparing quintile 5 to quintile 1 for advanced stage remains statistically significant (OR = 2.27 (1.18-4.35)) as is the p-value for trend. In contrast to the directionality of association for neighborhood SES, higher levels of education is associated with reduced risk of advanced prostate cancer, and association that remains statistically significant even after adjusting for established risk factors (OR = 0.65 (0.45-0.94) comparing college graduate to $\leq$ high school graduate).

Table 9 also shows the associations of each social and built environment factors with risk of localized and advanced stage prostate cancer. Although some characteristics are statistically significant in the base model, the only significant associations remaining in the fully adjusted model are: population density (OR = 0.47 (0.23-0.96) comparing Q3 to Q1 for localized stage, and % living in the same house for advanced stage (OR = 0.633 (0.41-0.96) comparing Q4 (higher proportion in block group living in same house over past 5 years) to Q1).

The effects of adjusting sequentially for each set of prostate cancer risk factors, and social and built environment factors on the ORs for education and neighborhood SES are shown in **Table 10** for localized stage and **Table 11** for advanced stage. Education and neighborhood SES are also modeled separately (separate models), together (both in the same model), and jointly (combination variable of education x neighborhood SES). The addition of individual risk factors include family history, BPH, prostatitis, PSA tests, and BMI, and the neighborhood factors population density, crowding, and residential mobility has the largest impact on attenuating the association of neighborhood SES with risk for localized and for advanced stage prostate cancer. The neighborhood factors gamma (street connectivity), total businesses, traffic density, restaurant environment, and parks, did not impact the neighborhood SES association.

We did not have adequate numbers of subjects to conduct these analyses stratified on racial/ethnic groups.

Thus, despite smaller sample sizes, we did find significant associations of increasing neighborhood SES with increased risk of localized and advanced prostate cancer, more than two-fold increased risk comparing the highest SES quintile to the lowest SES quintile. For localized prostate cancer, this association was largely explained by prostate cancer risk factors as well as certain neighborhood characteristics, specifically population density, crowding, and residential mobility. Neighborhoods that are more dense, have more crowded households, and have less population mobility are associated with lower localized prostate cancer risk. However, for advanced prostate cancer, the more than two-fold association of neighborhood SES (quintile 5 compared to quintile 1) remained statistically significant even with adjustment for behavioral and neighborhood characteristics.

For both Aim 1 and 2, we conducted recursive partitioning analyses to examine whether any of the contextual variables were statistically significant for particular patient subgroups and did not find this to be the case for prostate cancer risk or survival.

KEY RESEARCH ACCOMPLISHMENTS

- Created multilevel data comprising individual- and contextual-level data for population-based series of prostate cancer cases and controls.
- Found that a multi-component measure of socioeconomic status (SES) at a small-area level corresponding to the neighborhood of residence accounted for disparities in survival/mortality between Blacks and non-Hispanic Whites. An individual-level measure of SES – educational level – only partially accounted for the survival disparity.
- The multi-component measure of neighborhood SES was itself independently associated with survival/mortality after prostate cancer diagnosis. As only a portion of this association was explained by behavioral, hospital, and restaurant and food environment characteristics, additional research is needed to identify the factors and mechanisms underlying the robust association between neighborhood SES and mortality after prostate cancer diagnosis.
- Among Hispanic prostate cancer cases in LA County, overall mortality after prostate cancer diagnosis was lower among those who are foreign-born, who immigrated at a later age, and/or who spent a lower proportion of life in the US. In addition, overall mortality was lower among Hispanic cases in low enclaves compared with Hispanic cases in high enclaves. These associations were not affected by individual or neighborhood SES, behavioral, hospital, or other neighborhood characteristics.
- Found increased prostate cancer risk associated with increasing levels of neighborhood SES, more than two-fold increased risk of localized or advanced cancer comparing the highest to the lowest SES quintile. For localized disease, this association was largely explained by prostate cancer risk factors as well as certain neighborhood characteristics, specifically population density, crowding, and residential mobility. Neighborhoods that are more dense (more per capita residents), have more crowded households (household occupants), and have less population mobility are associated with lower prostate cancer risk. For advanced disease, the association with neighborhood SES was not explained by any available individual or neighborhood factors.

REPORTABLE OUTCOMES

- We submitted a grant to the DOD PCRP Disparities Announcement in 2013 to follow-up on the findings from this study, specifically to further examine racial/ethnic disparities in treatment, and role of families, institutions, and neighborhoods in the disparities. This grant was not funded.
- We submitted an R01 grant to the National Cancer Institute (NCI) in Spring 2014.
- The results also provided guidance to analyses for a currently-funded R01project investigating contextual factors and prostate cancer risk within the MultiEthnic Cohort (MEC) study.
- Two manuscripts describing the salient results are currently in preparation.

CONCLUSION

In this study, we demonstrated the importance of neighborhood factors, particularly socioeconomic status, in prostate cancer risk and survival, and in explaining the higher mortality among Blacks compared to non-Hispanic Whites. We also found significant associations of residence in a Hispanic ethnic enclave on mortality. This was an efficient study leveraging several available individual interview and geospatial datasets. These results indicate that additional research targeted to understanding the factors and mechanisms underpinning the neighborhood socioeconomic status associations with risk and survival, may help inform future interventions to ameliorate disparities particularly higher risk and mortality of disease among Blacks.

REFERENCES

None.

APPENDICES

None.

SUPPORTING DATA

TABLE 1a. Distribution of sociodemographic, neighborhood, and hospital characteristics among prostate cancer cases, San Francisco Bay Area & Los Angeles County (N=1,800), 1997-2003

Characteristic	N	%
Location[1]		
SF Bay Area	720	40.0%
LA County	1080	60.0%
Stage[2]		
Localized	686	38.1%
Advanced	1114	61.9%
Histologic grade[2]		
1-2	1157	64.3%
3-4	604	33.6%
Unknown	39	2.2%
Surgery[2]		
None	876	48.7%
Local or not otherwise specified	72	4.0%
Radical prostatectomy	852	47.3%
Radiation[2]		
None	1223	67.9%
Given	577	32.1%
Age at diagnosis[1]		
40-49	68	3.8%
50-59	444	24.7%
60-69	726	40.3%
70-79	489	27.2%
80+	73	4.1%
Race/ethnicity[1]		
Non-Hispanic White	978	54.3%
Black	505	28.1%
Hispanic	317	17.6%
Nativity[1]		
US-born	1476	82.0%
Foreign-born	324	18.0%
Education[1]		
$\leq$ High school	669	37.2%
Some college	516	28.7%
College graduate or more	615	34.2%
Marital status (at diagnosis)[2]		
Single, never married	196	10.9%
Married	1274	70.8%
Separated or divorced	170	9.4%
Widowed	82	4.6%
Unknown	78	4.3%
Family history of prostate cancer[1]		
No	1438	79.9%
Yes	361	20.1%
Unknown	1	0.1%
Benign prostatic hyperplasia[1]		
No	962	53.4%
Yes	781	43.4%
Unknown	57	3.2%

Prostatitis[1]		
No	1209	67.2%
Yes	843	30.1%
Unknown	7	2.8%
Number of comorbidities[1, 3]		
None	1230	68.3%
1	465	25.8%
2+	105	5.8%
Body mass index[1]		
<25	457	25.4%
25-29	876	48.7%
30+	451	25.1%
Unknown	16	0.9%
Average daily caloric intake[1]		
<1950	395	21.9%
1950-2584	403	22.4%
2585-3301	374	20.8%
3302+	442	24.6%
Missing	186	10.3%
Average daily alcohol consumption (gram)[1]		
0	811	45.1%
<5	157	8.7%
5-9.9	109	6.1%
10-14.9	129	7.2%
15+	408	22.7%
Unknown	186	10.%
Smoking[1]		
Never	515	28.6%
Former	929	51.6%
Current	343	19.1%
Unknown	13	0.7%
Recent moderate or high intensity physical activity (past 5 years, average hours per week, job, recreation, chores)[1]		
<2.8	435	24.2%
2.8-9.2	452	25.1%
9.3-22.9	447	24.8%
23.0+	445	24.7%
Unknown	21	1.1%
Neighborhood socioeconomic status (statewide quintiles)[3]		
Quintile 1 (lowest SES)	277	15.4%
Quintile 2	269	14.9%
Quintile 3	284	15.8%
Quintile 4	340	18.9%
Quintile 5 (highest SES)	624	34.7%
Missing	6	0.3%
Total number of parks within 1600 meters[3]		
0	497	27.6%
1-2	907	50.4%
3	173	9.6%
4	217	12.1%
Missing	6	0.3%
Total number of farmers markets within 1600 meters[3]		

0	1393	77.4%
1	287	15.9%
2+	114	6.3%
Missing	6	0.3%
Reported to the cancer registry by an NCI cancer center[2]		
Yes	198	11.0%
No	1602	89.0%
Distance between residence and hospital[3]		
<5 miles	819	48.6%
5-<10 miles	519	30.8%
10-<15 miles	167	9.9%
15-<50 miles	177	10.5%
50+ miles	3	0.2%

1 Data obtained from interview

2 Data obtained from the California Cancer Registry

3 Data obtained from the California Neighborhoods Data System; most contextual measures are not shown in this table because they are categorized into quartiles of tertiles based on the study sample distribution

TABLE 1b. Distribution of immigration and acculturation characteristics among Hispanic prostate cancer cases, Los Angeles County (N=317), 1997-2003

Characteristic	N	%
Nativity[1]		
US-born	111	35.0%
Foreign-born	206	65.0%
Age at migration[1]		
US-born	111	35.0%
<20	40	12.6%
20-29	65	20.5%
30-39	38	12.0%
40+	60	18.9%
Unknown	3	0.9%
Percent of life in the US[2]		
100%	111	35.0%
50-99%	115	36.3%
<50%	88	27.8%
Unknown	3	0.9%
Ethnic enclave (block group, statewide quintiles)[3]		
Quintile 1 (low enclave)	6	1.9%
Quintile 2	18	5.7%
Quintile 3	52	16.4%
Quintile 4	644	20.2%
Quintile 5 (high enclave)	177	55.8%

1 Data obtained from interview

2 Data obtained from the California Cancer Registry

3 Data obtained from the California Neighborhoods Data System

TABLE 2. Distribution of sociodemographic, neighborhood, and hospital characteristics among prostate cancer cases (by stage) and controls, San Francisco Bay Area, 1997-2000

	Case control groups						Total (N=1,317)	
	Control (N=542)		Localized (N=208)		Advanced (N=567)			
	N	%	N	%	N	%	N	%
Sociodemographic Characteristics								
Age								
<50	16	3.00%	7	3.40%	22	3.90%	45	3.40%
50-59	144	26.60%	43	20.70%	169	29.80%	356	27.00%
60-69	239	44.10%	70	33.70%	235	41.40%	544	41.30%
70-79	143	26.40%	88	42.30%	141	24.90%	372	28.20%
Race								
Non-Hispanic White	453	83.60%	135	64.90%	450	79.40%	1,038	78.80%
Black	89	16.40%	73	35.10%	117	20.60%	279	21.20%
Birthplace								
US-born	33	6.10%	16	7.70%	38	6.70%	87	6.60%
Foreign-born	507	93.50%	192	92.30%	529	93.30%	1,228	93.20%
Missing	<5	0.40%	0	0.00%	0	0.00%	<5	0.20%
Education								
<=High school graduate	122	22.50%	68	32.70%	149	26.30%	339	25.70%
Some college	163	30.10%	55	26.40%	152	26.80%	370	28.10%
College graduate	257	47.40%	85	40.90%	266	46.90%	608	46.20%
Medical History								
Family history								
No	477	88.00%	164	78.80%	459	81.00%	1,100	83.50%
Yes	65	12.00%	44	21.20%	108	19.00%	217	16.50%
Benign prostatic hyperplasia								
No	388	71.60%	119	57.20%	319	56.30%	826	62.70%
Yes	147	27.10%	81	38.90%	228	40.20%	456	34.60%
Missing	7	1.30%	8	3.80%	20	3.50%	35	2.70%
Prostatitis								
No	474	87.50%	146	70.20%	399	70.40%	1,019	77.40%
Yes	64	11.80%	56	26.90%	146	25.70%	266	20.20%
Missing	<5	0.70%	6	2.90%	22	3.90%	32	2.40%
Medical care								
MD/RN insured	521	96.10%	198	95.20%	536	94.50%	1,255	95.30%
ER/Public Clinic/Other	20	3.70%	10	4.80%	30	5.30%	60	4.60%
Missing	<5	0.20%	0	0.00%	<5	0.20%	<5	0.20%
PSA in last five years								
No	96	17.70%	37	17.80%	147	25.90%	280	21.30%
Yes	358	66.10%	166	79.80%	394	69.50%	918	69.70%
Missing	88	16.20%	5	2.40%	26	4.60%	119	9.00%

Number of PSAs in last five years								
0	96	17.70%	37	17.80%	147	25.90%	280	21.30%
1-2	132	24.40%	41	19.70%	125	22.00%	298	22.60%
3-4	80	14.80%	34	16.30%	83	14.60%	197	15.00%
5+	146	26.90%	91	43.80%	186	32.80%	423	32.10%
Missing	88	16.20%	5	2.40%	26	4.60%	119	9.00%
Personal Behavioral factors								
Body mass index (BMI)								
<25	136	25.10%	60	28.80%	153	27.00%	349	26.50%
25-29	249	45.90%	102	49.00%	278	49.00%	629	47.80%
30+	152	28.00%	39	18.80%	132	23.30%	323	24.50%
Missing	5	0.90%	7	3.40%	<5	0.70%	16	1.20%
Daily energy intake (kcal)								
<1950	161	29.70%	53	25.50%	157	27.70%	371	28.20%
1950-2584	141	26.00%	56	26.90%	141	24.90%	338	25.70%
2585-3301	126	23.20%	46	22.10%	120	21.20%	292	22.20%
3302+	96	17.70%	40	19.20%	112	19.80%	248	18.80%
Missing	18	3.30%	13	6.30%	37	6.50%	68	5.20%
Daily alcohol intake (g)								
0	180	33.20%	75	36.10%	187	33.00%	442	33.60%
<5	74	13.70%	18	8.70%	75	13.20%	167	12.70%
5-9.9	52	9.60%	19	9.10%	48	8.50%	119	9.00%
10-14.9	68	12.50%	21	10.10%	54	9.50%	143	10.90%
15+	168	31.00%	75	36.10%	203	35.80%	446	33.90%
Smoking								
Never	156	28.80%	53	25.50%	156	27.50%	365	27.70%
Former	291	53.70%	114	54.80%	290	51.10%	695	52.80%
Current	92	17.00%	35	16.80%	118	20.80%	245	18.60%
Missing	<5	0.60%	6	2.90%	<5	0.50%	12	0.90%
Lifetime recreational physical activity								
0	43	7.90%	18	8.70%	48	8.50%	109	8.30%
<1.2	167	30.80%	70	33.70%	163	28.70%	400	30.40%
1.2-2.4	168	31.00%	50	24.00%	176	31.00%	394	29.90%
2.5+	164	30.30%	70	33.70%	178	31.40%	412	31.30%
Missing	0	0.00%	0	0.00%	<5	0.40%	<5	0.20%
Recreational physical activity in 3 years before diagnosis								
0	211	38.90%	81	38.90%	221	39.00%	513	39.00%
<5	156	28.80%	61	29.30%	173	30.50%	390	29.60%
5+	175	32.30%	66	31.70%	171	30.20%	412	31.30%
Missing	0	0.00%	0	0.00%	<5	0.40%	<5	0.20%
Lifetime physical activity quartiles								
Quartile 1	135	24.90%	42	20.20%	130	22.90%	307	23.30%

Quartile 2	136	25.10%	66	31.70%	140	24.70%	342	26.00%
Quartile 3	136	25.10%	57	27.40%	156	27.50%	349	26.50%
Quartile 4	135	24.90%	43	20.70%	139	24.50%	317	24.10%
Missing	0	0.00%	0	0.00%	2	0.40%	2	0.20%
Neighborhood factors								
Neighborhood SES (State Quintile)								
Quintile 1 (low SES)	16	3.00%	7	3.40%	11	1.90%	34	2.60%
Quintile 2	50	9.20%	21	10.10%	44	7.80%	115	8.70%
Quintile 3	75	13.80%	27	13.00%	59	10.40%	161	12.20%
Quintile 4	135	24.90%	50	24.00%	107	18.90%	292	22.20%
Quintile 5 (high SES)	266	49.10%	103	49.50%	346	61.00%	715	54.30%
Population density (State Quartile)								
Quartile 1	84	15.50%	47	22.60%	116	20.50%	247	18.80%
Quartile 2	125	23.10%	46	22.10%	132	23.30%	303	23.00%
Quartile 3	140	25.80%	44	21.20%	149	26.30%	333	25.30%
Quartile 4	193	35.60%	71	34.10%	170	30.00%	434	33.00%
Total number of businesses (Control Quartile)								
Quartile 1	136	25.10%	65	31.30%	170	30.00%	371	28.20%
Quartile 2	135	24.90%	57	27.40%	139	24.50%	331	25.10%
Quartile 3	137	25.30%	39	18.80%	139	24.50%	315	23.90%
Quartile 4	134	24.70%	47	22.60%	119	21.00%	300	22.80%
Median block length (Control Quartile)								
Quartile 1	117	21.60%	47	22.60%	105	18.50%	269	20.40%
Quartile 2	116	21.40%	49	23.60%	131	23.10%	296	22.50%
Quartile 3	116	21.40%	45	21.60%	123	21.70%	284	21.60%
Quartile 4	116	21.40%	55	26.40%	142	25.00%	313	23.80%
Missing	77	14.20%	12	5.80%	66	11.60%	155	11.80%
Median block size (Control Quartile)								
Quartile 1	116	21.40%	51	24.50%	109	19.20%	276	21.00%
Quartile 2	117	21.60%	44	21.20%	125	22.00%	286	21.70%
Quartile 3	115	21.20%	45	21.60%	123	21.70%	283	21.50%
Quartile 4	117	21.60%	56	26.90%	144	25.40%	317	24.10%
Missing	77	14.20%	12	5.80%	66	11.60%	155	11.80%
Total intersections (Control Quartile)								
Quartile 1	136	25.10%	55	26.40%	136	24.00%	327	24.80%
Quartile 2	135	24.90%	50	24.00%	130	22.90%	315	23.90%
Quartile 3	137	25.30%	53	25.50%	146	25.70%	336	25.50%
Quartile 4	134	24.70%	50	24.00%	155	27.30%	339	25.70%
Total	542	100.00%	208	100.00%	567	100.00%	1,317	100.00%
Total street segments (Control Quartile)								
Quartile 1	137	25.30%	58	27.90%	141	24.90%	336	25.50%

Quartile 2	137	25.30%	46	22.10%	126	22.20%	309	23.50%
Quartile 3	136	25.10%	60	28.80%	158	27.90%	354	26.90%
Quartile 4	132	24.40%	44	21.20%	142	25.00%	318	24.10%
Street connectivity Alpha (Control Quartile)[2]								
Quartile 1 (less connectivity)	135	24.90%	59	28.40%	156	27.50%	350	26.60%
Quartile 2	136	25.10%	53	25.50%	140	24.70%	329	25.00%
Quartile 3	135	24.90%	32	15.40%	131	23.10%	298	22.60%
Quartile 4 (more connectivity)	136	25.10%	64	30.80%	140	24.70%	340	25.80%
Street connectivity Gamma (Control Quartile)[2]								
Quartile 1 (less connectivity)	136	25.10%	59	28.40%	160	28.20%	355	27.00%
Quartile 2	136	25.10%	53	25.50%	137	24.20%	326	24.80%
Quartile 3	133	24.50%	33	15.90%	136	24.00%	302	22.90%
Quartile 4 (more connectivity)	137	25.30%	63	30.30%	134	23.60%	334	25.40%
Traffic density (Control Quartile)								
Quartile 1 (less dense)	135	24.90%	58	27.90%	163	28.70%	356	27.00%
Quartile 2	136	25.10%	57	27.40%	143	25.20%	336	25.50%
Quartile 3	136	25.10%	57	27.40%	134	23.60%	327	24.80%
Quartile 4 (more dense)	135	24.90%	36	17.30%	127	22.40%	298	22.60%
% traveled 60+ minutes to work (Control Quartile)								
Quartile 1	136	25.10%	50	24.00%	143	25.20%	329	25.00%
Quartile 2	134	24.70%	50	24.00%	140	24.70%	324	24.60%
Quartile 3	138	25.50%	59	28.40%	158	27.90%	355	27.00%
Quartile 4	134	24.70%	49	23.60%	126	22.20%	309	23.50%
% traveled to work by car or motorcycle (Control Quartile)								
Quartile 1	136	25.10%	47	22.60%	121	21.30%	304	23.10%
Quartile 2	135	24.90%	69	33.20%	170	30.00%	374	28.40%
Quartile 3	136	25.10%	50	24.00%	149	26.30%	335	25.40%
Quartile 4	135	24.90%	42	20.20%	127	22.40%	304	23.10%
% living in the same house during 1995-2000 (Control Quartile)								
Quartile 1	165	30.40%	67	32.20%	206	36.30%	438	33.30%
Quartile 2	116	21.40%	53	25.50%	137	24.20%	306	23.20%
Quartile 3	137	25.30%	52	25.00%	133	23.50%	322	24.40%
Quartile 4	124	22.90%	36	17.30%	91	16.00%	251	19.10%
% occupied housing units with 1+ occupant per room (Control Quartile)								
Quartile 1	135	24.90%	61	29.30%	166	29.30%	362	27.50%
Quartile 2	136	25.10%	51	24.50%	164	28.90%	351	26.70%
Quartile 3	135	24.90%	50	24.00%	121	21.30%	306	23.20%
Quartile 4	136	25.10%	46	22.10%	116	20.50%	298	22.60%
Total	542	100.00%	208	100.00%	567	100.00%	1,317	100.00%

% non-single family units (Control Quartile)								
Quartile 1	136	25.10%	45	21.60%	148	26.10%	329	25.00%
Quartile 2	135	24.90%	60	28.80%	172	30.30%	367	27.90%
Quartile 3	135	24.90%	58	27.90%	121	21.30%	314	23.80%
Quartile 4	136	25.10%	45	21.60%	126	22.20%	307	23.30%
% units in structures with 10+ units (Control Quartile)								
Quartile 1	222	41.00%	81	38.90%	231	40.70%	534	40.50%
Quartile 2	49	9.00%	20	9.60%	71	12.50%	140	10.60%
Quartile 3	135	24.90%	60	28.80%	148	26.10%	343	26.00%
Quartile 4	136	25.10%	47	22.60%	117	20.60%	300	22.80%
Restaurant environment index (REI) (Control Tertile)[1]								
0	144	26.60%	66	31.70%	169	29.80%	379	28.80%
Tertile 1	113	20.80%	32	15.40%	120	21.20%	265	20.10%
Tertile 2	109	20.10%	50	24.00%	106	18.70%	265	20.10%
Tertile 3	119	22.00%	38	18.30%	109	19.20%	266	20.20%
Missing	57	10.50%	22	10.60%	63	11.10%	142	10.80%
Restaurant environment index 2 (Control Tertile)[1]								
0	141	26.00%	66	31.70%	168	29.60%	375	28.50%
Tertile 1	113	20.80%	30	14.40%	120	21.20%	263	20.00%
Tertile 2	110	20.30%	53	25.50%	105	18.50%	268	20.30%
Tertile 3	118	21.80%	37	17.80%	110	19.40%	265	20.10%
Missing	60	11.10%	22	10.60%	64	11.30%	146	11.10%
Retail food environment index (RFEI)(Control Tertile)[1]								
0	85	15.70%	33	15.90%	86	15.20%	204	15.50%
Tertile 1	131	24.20%	52	25.00%	125	22.00%	308	23.40%
Tertile 2	123	22.70%	45	21.60%	138	24.30%	306	23.20%
Tertile 3	146	26.90%	45	21.60%	128	22.60%	319	24.20%
Missing	57	10.50%	33	15.90%	90	15.90%	180	13.70%
Retail food environment Index 2 (Control Tertile)[1]								
0	51	9.40%	13	6.30%	46	8.10%	110	8.40%
Tertile 1	137	25.30%	56	26.90%	151	26.60%	344	26.10%
Tertile 2	154	28.40%	63	30.30%	145	25.60%	362	27.50%
Tertile 3	148	27.30%	44	21.20%	144	25.40%	336	25.50%
Missing	52	9.60%	32	15.40%	81	14.30%	165	12.50%
Retail food environment index 3 (Control Tertile)[1]								
0	87	16.10%	37	17.80%	89	15.70%	213	16.20%
Tertile 1	136	25.10%	57	27.40%	131	23.10%	324	24.60%
Tertile 2	121	22.30%	43	20.70%	136	24.00%	300	22.80%
Tertile 3	143	26.40%	42	20.20%	124	21.90%	309	23.50%

Missing	55	10.10%	29	13.90%	87	15.30%	171	13.00%
Retail food environment index 4 (Control Tertile)[1]								
0	53	9.80%	17	8.20%	48	8.50%	118	9.00%
Tertile 1	143	26.40%	57	27.40%	152	26.80%	352	26.70%
Tertile 2	161	29.70%	65	31.30%	153	27.00%	379	28.80%
Tertile 3	135	24.90%	41	19.70%	135	23.80%	311	23.60%
Missing	50	9.20%	28	13.50%	79	13.90%	157	11.90%
Total number of parks (Control Tertile)								
0	87	16.10%	44	21.20%	113	19.90%	244	18.50%
1-2 Parks	245	45.20%	90	43.30%	248	43.70%	583	44.30%
3 Parks	77	14.20%	26	12.50%	76	13.40%	179	13.60%
4+ Parks	133	24.50%	48	23.10%	130	22.90%	311	23.60%
Total numbers of farmers markets (Control Tertile)								
0	375	69.20%	143	68.80%	405	71.40%	923	70.10%
1 Farmers Market	115	21.20%	40	19.20%	101	17.80%	256	19.40%
2+ Farmers Markets	52	9.60%	25	12.00%	61	10.80%	138	10.50%

[1] Restaurant Environment Index (REI) = F_Fast/(F_Rest + F_Other)
Restaurant Environment Index2 (REI2)= F_Fast/F_Rest
Retail Food Environment Index (FREI) = F_CONV/F_SPRMKT
Retail Food Environment Index 2 (RFEI2)= (F_CONV + F_FAST + F_LIQUOR)/(F_SPRMKT)
Retail Food Environment Index 3 (FREI3) = F_CONV/(F_SPRMKT+FARMMKT_count)
Retail FoodEnvironment Index 4 (RFEI4)= (F_CONV + F_FAST + F_LIQUOR)/(F_SPRMKT+FARMMKT_count)
Tertile 3 group includes those with denominator=0 but numerator>0
Missing group includes those with denominator=0 but numerator=0

[2] Alpha measure=Ratio of the actual number of complete loops to the maximum number of possible loops given the number of intersections.
Gamma measure=Ratio of actual number street segments to maximum possible given the number of intersections

Table 3. Association of education and neighborhood SES with all-cause and prostate cancer specific survival among men with prostate cancer, San Francisco Bay Area and Los Angeles County, 1997-2003

	Variable	All-Cause HR (95% CI)	Prostate Cancer HR (95% CI)
Model 1a	Education (case-level)		
	High School Degree or Less	**1.46 (1.18-1.82)**	1.19 (0.86-1.66)
	Some College	1.14 (0.90-1.44)	0.92 (0.64-1.33)
	College Graduate or Higher	1	1
	P-trend	<0.01	0.27
Model 1b	Neighborhood SES		
	Quintile 1 (low SES)	**1.75 (1.27-2.41)**	**1.85 (1.11-3.07)**
	Q2	**1.37 (1.02-1.83)**	1.53 (0.97-2.40)
	Q3	**1.46 (1.10-1.93)**	1.39 (0.89-2.17)
	Q4	1.22 (0.95-1.57)	0.90 (0.58-1.38)
	Quintile 5 (high SES)	1	1
	P-trend	<0.01	<0.01
Model 2	Education (case level)		
	High School Degree or Less	**1.32 (1.05-1.67)**	1.04 (0.72-1.49)
	Some College	1.07 (0.84-1.36)	0.84 (0.57-1.24)
	College Graduate or Higher	1	1
	P-trend	0.01	0.81
	Neighborhood SES		
	Quintile 1 (low SES)	**1.56 (1.11-2.19)**	**1.85 (1.07-3.20)**
	Q2	1.26 (0.93-1.71)	1.55 (0.96-2.50)
	Q3	**1.34 (1.01-1.80)**	1.41 (0.88-2.24)
	Q4	1.16 (0.90-1.50)	0.91 (0.58-1.42)
	Quintile 5 (high SES)	1	1
	P-trend	0.02	0.02
Model 3	Education & Neighborhood SES		
	≤High School, Low neighborhood SES	**1.64 (1.27-2.12)**	**1.81 (1.23-2.66)**
	≤High School, High neighborhood SES	**1.48 (1.14-1.92)**	0.90 (0.55-1.47)
	College +, Low neighborhood SES	**1.39 (1.07-1.80)**	1.32 (0.87-1.99)
	College +, High neighborhood SES	1	1

All models shown are multivariate stage-stratified Cox proportional hazards regression models, with cluster adjustment for census block groups, adjusted for age, race, study site, tumor characteristics, treatment and presence of subsequent tumors

Models 1a & 1b: Education and neighborhood SES in separate models; neighborhood SES based on block-group SES index based on 7 Census 2000 variables (Yost et al., Cancer Causes Control 2001), quintiles based on state distribution

Model 2: Education and neighborhood SES in the same model

Model 3: Combination term modeling joint association of education and neighborhood SES; low neighborhood SES = quintile 1-3, high neighborhood SES = quintile 4-5

Table 4. Association of race/ethnicity and neighborhood SES with all-cause survival among men with prostate cancer, adjusting for behavioral factors and built environment factors, San Francisco Bay Area and Los Angeles County, 1997-2003

					"Base Model" Model 1=Age Race Center Strat Stage Blk Grp Adj +1st Subseq Tumor, Time to 1st subseq Tumor, Surgery,histologic grade			Model 3= Base Model + USBorn, Comorbidities, BMI, Smoking, Recent PhysicalActivity, Hospital Patient SES composition			Model 4a = Model 3+ Restaurant Index 2			Model 4b = Model 3+ Retail Food Env Index 1 (Conv + FastFood)/Supermkt			Model 4c = Model 3+ Retail Food Env Index 2 (Conv + FastFood **+Liquor**)/Supermk			Model 4d = Model 3+ Retail Food Env Index 3 (Conv + FastFood)/(Supermkt+**Farmers Mkt**)			Model 4e = Model 3+ Retail Food Env Index 4 (Conv + FastFood **+Liquor**)/(Supermkt+**Farmers Mkt**)		
	Cases		All Cause Deaths		Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI
Race					Univariate: not adj for tumor and treatment																							
White					1.00																							
Black					**1.33**	**1.10**	**1.61**																					
Hispanic					1.10	0.84	1.43																					
Race					Base Model																							
White					1.00																							
Black					**1.40**	**1.15**	**1.70**																					
Hispanic					1.18	0.91	1.54																					
Race																												
White					1.00			1.00																				
Black					1.17	0.94	1.46	1.11	0.89	1.39																		
Hispanic					0.98	0.74	1.31	1.10	0.81	1.51																		
Neighborhood SES																												
Quintile 1 (low SES)	277	15%	106	19%	**1.75**	**1.27**	**2.41**	**1.64**	**1.18**	**2.29**	**1.60**	**1.13**	**2.27**	**1.62**	**1.13**	**2.32**	**1.58**	**1.11**	**2.26**	**1.60**	**1.12**	**2.29**	**1.56**	**1.10**	**2.23**
Q2	269	15%	95	17%	**1.37**	**1.02**	**1.83**	1.28	0.95	1.73	1.25	0.91	1.72	1.26	0.92	1.73	1.24	0.91	1.70	1.25	0.91	1.72	1.24	0.90	1.70
Q3	284	16%	91	16%	**1.46**	**1.10**	**1.93**	**1.44**	**1.08**	**1.91**	**1.43**	**1.05**	**1.94**	**1.41**	**1.04**	**1.91**	**1.41**	**1.04**	**1.91**	**1.41**	**1.04**	**1.91**	**1.43**	**1.05**	**1.93**
Q4	340	19%	104	19%	1.22	0.95	1.57	1.17	0.91	1.51	1.15	0.88	1.51	1.16	0.89	1.51	1.16	0.89	1.50	1.16	0.89	1.52	1.16	0.89	1.51
Quintile 5 (high SES	624	35%	160	29%	1.00			1.00			1.00			1.00			1.00			1.00			1.00		
Missing	6	0%	1	0%																					
p trend	1800		557		***<0.01***			***<0.01***			***0.01***			***0.01***			***0.02***			***0.02***			***0.02***		

Table 5. Association of race/ethnicity and case-level education with all-cause survival among men with prostate cancer, adjusting for behavioral factors and built environment factors, San Francisco Bay Area and Los Angeles County, 1997-2003

					"Base Model" Model 1=Age Race Center Strat Stage Blk Grp Adj +1st Subseq Tumor, Time to 1st subseq Tumor, Surgery,histologic grade			Model 3= Base Model + USBorn, Comorbidities, BMI, Smoking, Recent PhysicalActivity, Hospital Patient SES composition			Model 4a = Model 3+ Restaurant Index 2			Model 4b = Model 3+ Retail Food Env Index 1 (Conv + FastFood)/Supermkt			Model 4c = Model 3+ Retail Food Env Index 2 (Conv + FastFood **+Liquor**)/Supermk			Model 4d = Model 3+ Retail Food Env Index 3 (Conv + FastFood)/(Supermkt+**Farmers Mkt**)			Model 4e = Model 3+ Retail Food Env Index 4 (Conv + FastFood **+Liquor**)/(Supermkt+**Farmers Mkt**)		
	Cases		All Cause Deaths		Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI
Race																											
White					1.00			1.00																			
Black					**1.26**	**1.03**	**1.55**	1.16	0.94	1.44																	
Hispanic					1.00	0.76	1.32	1.09	0.80	1.48																	
Education																											
<=Hsgrad	669	37%	255	46%	**1.46**	**1.18**	**1.82**	**1.44**	**1.15**	**1.81**	**1.42**	**1.13**	**1.79**	**1.43**	**1.13**	**1.79**	**1.41**	**1.12**	**1.78**	**1.41**	**1.12**	**1.78**	**1.41**	**1.12**	**1.78**
Some College	516	29%	154	28%	1.14	0.90	1.44	1.12	0.88	1.43	1.12	0.88	1.43	1.11	0.87	1.42	1.11	0.87	1.42	1.11	0.87	1.42	1.11	0.87	1.42
College Grad+	615	34%	148	27%	1.00			1.00			1.00			1.00			1.00			1.00			1.00		
p trend	1800		557		***<0.01***			***<0.01***			***<0.01***			***<0.01***			***<0.01***			***<0.01***			***<0.01***		

Table 6. Association of race/ethnicity, neighborhood SES, and case-level education with all-cause survival among men with prostate cancer, adjusting for behavioral factors and built environment factors, San Francisco Bay Area and Los Angeles County, 1997-2003

					"Base Model" Model 1=Age Race Center Strat Stage Blk Grp Adj +1st Subseq Tumor, Time to 1st subseq Tumor, Surgery,histologic grade			Model 3= Base Model + USBorn, Comorbidities, BMI, Smoking, Recent PhysicalActivity, Hospital Patient SES composition			Model 4a = Model 3+ Restaurant Index 2			Model 4b = Model 3+ Retail Food Env Index 1 (Conv + FastFood)/Supermkt			Model 4c = Model 3+ Retail Food Env Index 2 (Conv + FastFood **+Liquor**)/Supermk			Model 4d = Model 3+ Retail Food Env Index 3 (Conv + FastFood)/(Supermkt+**Farmers Mkt**)			Model 4e = Model 3+ Retail Food Env Index 4 (Conv + FastFood **+Liquor**)/(Supermkt+**Farmers Mkt**)		
	Cases		All Cause Deaths		Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI
Race																											
White					1.00			1.00																			
Black					1.13	0.91	1.42	1.07	0.85	1.34																	
Hispanic					0.90	0.67	1.21	1.02	0.74	1.40																	
Neighborhood SES																											
Quintile 1 (low SES)	277	15%	106	19%	**1.56**	**1.11**	**2.19**	**1.47**	**1.04**	**2.08**	**1.44**	**1.00**	**2.06**	**1.46**	**1.01**	**2.12**	**1.43**	**0.99**	**2.06**	**1.45**	**1.00**	**2.10**	**1.41**	**0.98**	**2.03**
Q2	269	15%	95	17%	1.26	0.93	1.71	1.18	0.87	1.61	1.16	0.83	1.60	1.17	0.85	1.62	1.16	0.84	1.60	1.17	0.85	1.62	1.16	0.84	1.59
Q3	284	16%	91	16%	**1.34**	**1.01**	**1.80**	1.33	0.99	1.78	1.32	0.96	1.80	1.30	0.96	1.78	1.31	0.96	1.78	1.30	0.95	1.78	1.32	0.97	1.80
Q4	340	19%	104	19%	1.16	0.90	1.50	1.11	0.86	1.45	1.10	0.83	1.44	1.10	0.85	1.44	1.10	0.85	1.44	1.11	0.85	1.45	1.11	0.85	1.44
Quintile 5 (high SES	624	35%	160	29%	1.00			1.00			1.00			1.00			1.00			1.00			1.00		
Missing	6	0%	1	0%																					
p trend	1800		557		***0.02***			*0.05*			*0.08*			*0.07*			*0.08*			*0.08*			*0.10*		
Education																									
<=Hsgrad	669	37%	255	46%	**1.32**	**1.05**	**1.67**	**1.33**	**1.04**	**1.68**	**1.33**	**1.04**	**1.69**	**1.33**	**1.05**	**1.69**	**1.32**	**1.04**	**1.68**	**1.32**	**1.04**	**1.68**	**1.32**	**1.04**	**1.68**
Some College	516	29%	154	28%	1.07	0.84	1.36	1.07	0.83	1.37	1.08	0.84	1.38	1.07	0.83	1.37	1.07	0.83	1.37	1.07	0.83	1.37	1.07	0.83	1.37
College Grad+	615	34%	148	27%	1.00			1.00			1.00			1.00			1.00			1.00			1.00		
p trend	1800		557		***0.01***			***0.01***			***0.01***			***0.01***			***0.01***			***0.01***			***0.01***		

Table 7. Association of race/ethnicity, and neighborhood SES x case-level education with all-cause survival among men with prostate cancer, adjusting for behavioral factors and built environment factors, San Francisco Bay Area and Los Angeles County, 1997-2003

					"Base Model" Model 1=Age Race Center Strat Stage Blk Grp Adj +1st Subseq Tumor, Time to 1st subseq Tumor, Surgery,histologic grade			Model 3= Base Model + USBorn, Comorbidities, BMI, Smoking, Recent PhysicalActivity, Hospital Patient SES composition			Model 4a = Model 3+ Restaurant Index 2			Model 4b = Model 3+ Retail Food Env Index 1 (Conv + FastFood)/Supermkt			Model 4c = Model 3+ Retail Food Env Index 2 (Conv + FastFood **+Liquor**)/Supermk			Model 4d = Model 3+ Retail Food Env Index 3 (Conv + FastFood)/(Supermkt+**Farmers Mkt**)			Model 4e = Model 3+ Retail Food Env Index 4 (Conv + FastFood **+Liquor**)/(Supermkt+**Farmers Mkt**)		
	Cases		All Cause Deaths		Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI	Adj	95%	CI
Race																										
White					1.00			1.00																		
Black					1.18	0.96	1.47	1.10	0.89	1.37																
Hispanic					0.96	0.72	1.27	1.04	0.76	1.43																
Education and neighborhood SES (low:1-3, Hi:4-5)																										
<=Hsgrad, Low nSES	465	26%	173	31%	**1.64**	**1.27**	**2.12**	**1.60**	**1.23**	**2.09**	**1.58**	**1.19**	**2.08**	**1.59**	**1.20**	**2.10**	**1.57**	**1.19**	**2.07**	**1.57**	**1.19**	**2.07**	**1.57**	**1.18**	**2.08**
<=Hsgrad, Hi nSES	203	11%	82	15%	**1.48**	**1.14**	**1.92**	**1.48**	**1.14**	**1.92**	**1.47**	**1.13**	**1.92**	**1.47**	**1.13**	**1.92**	**1.46**	**1.12**	**1.91**	**1.47**	**1.13**	**1.93**	**1.47**	**1.12**	**1.92**
PostHS, Low nSES	365	20%	119	21%	**1.39**	**1.07**	**1.80**	**1.37**	**1.05**	**1.78**	**1.36**	**1.03**	**1.79**	**1.35**	**1.02**	**1.78**	**1.34**	**1.01**	**1.77**	**1.34**	**1.02**	**1.77**	**1.35**	**1.02**	**1.78**
Post HS, Hi nSES	761	42%	182	33%	1.00			1.00			1.00			1.00			1.00			1.00			1.00		
Missing	6	0%	1	0%																						
	1800		557																							

Table 8. Association of individual immigration factors and neighborhood ethnic enclave with all-cause survival among Hispanic men with prostate cancer, San Francisco Bay Area and Los Angeles County, 1997-2003

	Cases (%)	Deaths (%)	HR (95% CI)
MODEL 1			
Nativity			
Foreign-born	206 (65%)	51 (54%)	**0.58 (0.39-0.87)**
US-born	111 (35%)	43 (46%)	1.0
Hispanic ethnic enclave			
Q1-Q3 (low enclave)	76 (24%)	15 (16%)	**0.50 (0.28-0.88)**
Q4	64 (20%)	22 (23%)	0.85 (0.51-1.42)
Q5 (high enclave)	177 (56%)	57 (61%)	1.0
MODEL 2			
Age at migration			
US-born	111 (35%)	43 (46%)	1.0
Age < 30	105 (33%)	25 (27%)	0.63 (0.37-1.07)
30+	98 (31%)	25 (27%)	**0.58 (0.35-0.95)**
Hispanic ethnic enclave			
Q1-Q3 (low enclave)	76 (24%)	15 (16%)	**0.50 (0.28-0.88)**
Q4	64 (20%)	22 (23%)	0.85 (0.51-1.40)
Q5 (high enclave)	177 (56%)	57 (61%)	1.0
MODEL 3			
% life spent in US			
100%	111 (35%)	43 (46%)	1.0
50-99%	115 (36%)	27 (29%)	**0.59 (0.36-0.97)**
<50%	88 (28%)	23 (24%)	0.63 (0.38-1.04)
Hispanic ethnic enclave			
Q1-Q3 (low enclave)	76 (24%)	15 (16%)	**0.49 (0.28-0.87)**
Q4	64 (20%)	22 (23%)	0.85 (0.51-1.40)
Q5 (high enclave)	177 (56%)	57 (61%)	1.0
MODEL 4			
Nativity x ethnic enclave			
US-born x low enclave (1-3)	45 (14%)	12 (13%)	1.12 (0.63-2.01)
US-born x high enclave (4-5)	66 (21%)	31 (33%)	1.38 (0.88-2.15)
Foreign-born x low enclave (1-3)	31 (10%)	3 (3%)	**0.23 (0.06-0.84)**
Foreign-born x high enclave (4-5)	175 (55%)	48 (51%)	1.0

All models shown are multivariate stage-stratified Cox proportional hazards regression models, with cluster adjustment for census block groups, adjusted for age, race, study site, tumor characteristics, treatment and presence of subsequent tumor(s)

Table 9. Adjusted odds ratios (OR) and 95% confidence intervals (CI) for associations of case-level education, neighborhood SES, and neighborhood factors with risk of localized and advanced prostate cancer, Northern California, 1997-2000

	All Race Combined						
	Control	Localized Case			Advanced Case		
	N (%)	N (%)	Base OR (95% CI)[1]	Multivariate OR (95% CI)[2]	N (%)	Base OR (95% CI)[1]	Multivariate OR (95% CI)[2]
SES Measures							
Education							
<=Hsgrad	122 (22.5%)	68 (32.7%)	1.00 (ref)	1.00 (ref)	149 (26.3%)	1.00 (ref)	1.00 (ref)
Some college	163 (30.1%)	55 (26.4%)	0.73 (0.47-1.13)	0.69 (0.42-1.13)	152 (26.8%)	**0.71 (0.50-1.00)**	**0.68 (0.47-0.99)**
College graduate	257 (47.4%)	85 (40.9%)	0.75 (0.48-1.18)	0.60 (0.36-1.00)	266 (46.9%)	**0.68 (0.49-0.95)**	**0.65 (0.45-0.94)**
Total	542 (100.0%)	208 (100.0%)	Ptrend=0.25	Ptrend=0.06	567 (100.0%)	**Ptrend=0.03**	**Ptrend=0.03**
YOST (State Quintile)							
Q1,Q2, low SES	66 (12.2%)	28 (13.5%)	1.00 (ref)	1.00 (ref)	55 (9.7%)	1.00 (ref)	1.00 (ref)
Q3	75 (13.8%)	27 (13.0%)	1.47 (0.76-2.86)	1.29 (0.60-2.76)	59 (10.4%)	1.25 (0.74-2.10)	1.12 (0.62-2.03)
Q4	135 (24.9%)	50 (24.0%)	**1.93 (1.03-3.61)**	1.70 (0.79-3.65)	107 (18.9%)	1.41 (0.86-2.33)	1.24 (0.69-2.24)
Q5, high SES	266 (49.1%)	103 (49.5%)	**2.66 (1.42-4.98)**	1.98 (0.83-4.72)	346 (61.0%)	**2.67 (1.64-4.35)**	**2.27 (1.18-4.35)**
Total	542 (100.0%)	208 (100.0%)	**Ptrend<0.01**	Ptrend=0.09	567 (100.0%)	**Ptrend<0.01**	**Ptrend<0.01**
Neighborhood Factors							
Population Density (State Quartile)							
Q1	84 (15.5%)	47 (22.6%)	1.00 (ref)	1.00 (ref)	116 (20.5%)	1.00 (ref)	1.00 (ref)
Q2	125 (23.1%)	46 (22.1%)	0.63 (0.38-1.04)	0.57 (0.31-1.04)	132 (23.3%)	0.76 (0.52-1.12)	0.64 (0.40-1.04)
Q3	140 (25.8%)	44 (21.2%)	**0.49 (0.30-0.81)**	**0.47 (0.23-0.96)**	149 (26.3%)	0.74 (0.51-1.09)	0.64 (0.37-1.11)
Q4	193 (35.6%)	71 (34.1%)	**0.41 (0.25-0.67)**	0.54 (0.22-1.31)	170 (30.0%)	**0.56 (0.39-0.82)**	0.62 (0.33-1.17)
Total	542 (100.0%)	208 (100.0%)	**Ptrend<0.01**	Ptrend=0.18	567 (100.0%)	**Ptrend<0.01**	Ptrend=0.21
Total Number of Business (Control Quartile)							
Q1	136 (25.1%)	65 (31.3%)	1.00 (ref)	1.00 (ref)	170 (30.0%)	1.00 (ref)	1.00 (ref)
Q2	*135 (24.9%)*	57 (27.4%)	0.80 (0.52-1.24)	0.97 (0.53-1.81)	139 (24.5%)	0.81 (0.58-1.12)	0.96 (0.62-1.49)
Q3	137 (25.3%)	39 (18.8%)	**0.50 (0.31-0.81)**	0.56 (0.27-1.15)	139 (24.5%)	0.78 (0.56-1.09)	0.79 (0.48-1.30)
Q4	134 (24.7%)	47 (22.6%)	**0.58 (0.37-0.91)**	0.69 (0.27-1.74)	119 (21.0%)	**0.67 (0.47-0.94)**	0.70 (0.35-1.39)
Total	542 (100.0%)	208 (100.0%)	**Ptrend<0.01**	Ptrend=0.18	567 (100.0%)	**Ptrend=0.02**	Ptrend=0.24
Gamma (Control Quartile)[2]							
Q1	136 (25.1%)	59 (28.4%)	1.00 (ref)	1.00 (ref)	160 (28.2%)	1.00 (ref)	1.00 (ref)
Q2	136 (25.1%)	53 (25.5%)	0.83 (0.53-1.30)	1.29 (0.75-2.22)	137 (24.2%)	0.84 (0.60-1.18)	1.13 (0.74-1.71)
Q3	133 (24.5%)	33 (15.9%)	**0.50 (0.30-0.82)**	0.98 (0.49-1.99)	136 (24.0%)	0.84 (0.60-1.19)	1.28 (0.78-2.10)
Q4	137 (25.3%)	63 (30.3%)	0.65 (0.40-1.05)	1.92 (0.82-4.50)	134 (23.6%)	0.73 (0.51-1.04)	1.48 (0.82-2.67)
Total	542 (100.0%)	208 (100.0%)	**Ptrend=0.02**	Ptrend=0.24	567 (100.0%)	Ptrend=0.10	Ptrend=0.19

Table 9 (cont'd)

	All Race Combined						
	Control	Localized Case			Advanced Case		
	N (%)	N (%)	Base OR (95% CI)[1]	Multivariate OR (95% CI)[2]	N (%)	Base OR (95% CI)[1]	Multivariate OR (95% CI)[2]
Traffic Density (Control Quartile)							
Q1	135 (24.9%)	58 (27.9%)	1.00 (ref)	1.00 (ref)	163 (28.7%)	1.00 (ref)	1.00 (ref)
Q2	136 (25.1%)	57 (27.4%)	0.86 (0.55-1.34)	1.35 (0.77-2.35)	143 (25.2%)	0.85 (0.61-1.17)	1.08 (0.72-1.60)
Q3	136 (25.1%)	57 (27.4%)	0.86 (0.55-1.35)	1.44 (0.79-2.65)	134 (23.6%)	0.79 (0.57-1.10)	1.04 (0.67-1.60)
Q4	135 (24.9%)	36 (17.3%)	**0.47 (0.29-0.78)**	0.90 (0.46-1.77)	127 (22.4%)	0.73 (0.52-1.03)	1.06 (0.67-1.68)
Total	542 (100.0%)	208 (100.0%)	**Ptrend<0.01**	Ptrend=0.75	567 (100.0%)	Ptrend=0.06	Ptrend=0.88
% living in the same house during 1995-2000 (Control Quartile)							
Q1	165 (30.4%)	67 (32.2%)	1.00 (ref)	1.00 (ref)	206 (36.3%)	1.00 (ref)	1.00 (ref)
Q2	116 (21.4%)	53 (25.5%)	1.12 (0.72-1.73)	1.23 (0.77-1.97)	137 (24.2%)	0.94 (0.67-1.33)	0.99 (0.69-1.43)
Q3	137 (25.3%)	52 (25.0%)	0.92 (0.59-1.41)	1.14 (0.69-1.89)	133 (23.5%)	0.76 (0.55-1.05)	0.91 (0.64-1.32)
Q4	124 (22.9%)	36 (17.3%)	0.69 (0.43-1.12)	0.91 (0.51-1.63)	91 (16.0%)	**0.57 (0.40-0.80)**	**0.63 (0.41-0.96)**
Total	542 (100.0%)	208 (100.0%)	Ptrend=0.12	Ptrend=0.84	567 (100.0%)	**Ptrend<0.01**	**Ptrend=0.05**
Crowding - % occupied housing units with 1+ occupant per room (Control Quartile)							
Q1	135 (24.9%)	61 (29.3%)	1.00 (ref)	1.00 (ref)	166 (29.3%)	1.00 (ref)	1.00 (ref)
Q2	136 (25.1%)	51 (24.5%)	0.76 (0.49-1.19)	0.80 (0.47-1.36)	164 (28.9%)	0.96 (0.68-1.34)	1.04 (0.71-1.52)
Q3	135 (24.9%)	50 (24.0%)	**0.61 (0.39-0.96)**	0.74 (0.38-1.43)	121 (21.3%)	**0.67 (0.48-0.95)**	0.97 (0.62-1.51)
Q4	136 (25.1%)	46 (22.1%)	**0.43 (0.26-0.72)**	0.66 (0.30-1.44)	116 (20.5%)	**0.60 (0.42-0.86)**	1.07 (0.62-1.86)
Total	542 (100.0%)	208 (100.0%)	**Ptrend<0.01**	Ptrend=0.29	567 (100.0%)	**Ptrend<0.01**	Ptrend=0.88
Restaurant Environment Index 2 (Control Tertile)[1]							
0	141 (26.0%)	66 (31.7%)	1.00 (ref)	1.00 (ref)	168 (29.6%)	1.00 (ref)	1.00 (ref)
T1	113 (20.8%)	30 (14.4%)	**0.49 (0.30-0.81)**	0.73 (0.34-1.54)	120 (21.2%)	0.86 (0.61-1.21)	1.35 (0.80-2.28)
T2	110 (20.3%)	53 (25.5%)	0.83 (0.52-1.32)	1.40 (0.75-2.59)	105 (18.5%)	0.78 (0.55-1.11)	1.17 (0.75-1.85)
T3	118 (21.8%)	37 (17.8%)	**0.55 (0.33-0.91)**	0.81 (0.44-1.51)	110 (19.4%)	0.76 (0.53-1.07)	1.03 (0.69-1.55)
Missing	60 (11.1%)	22 (10.6%)	0.81 (0.45-1.47)	0.57 (0.29-1.14)	64 (11.3%)	0.91 (0.61-1.36)	0.72 (0.43-1.19)
Total	542 (100.0%)	208 (100.0%)	Ptrend[4]=0.07	Ptrend=0.73	567 (100.0%)	Ptrend[4]=0.09	Ptrend=0.90
Total Number of Parks (Control Tertile)							
0	87 (16.1%)	44 (21.2%)	1.00 (ref)	1.52 (0.73-3.13)	113 (19.9%)	1.00 (ref)	1.39 (0.83-2.33)
1-2 Parks	245 (45.2%)	90 (43.3%)	0.68 (0.43-1.08)	1.15 (0.66-2.02)	248 (43.7%)	0.77 (0.55-1.08)	1.07 (0.72-1.57)
3 Parks	77 (14.2%)	26 (12.5%)	**0.54 (0.29-0.99)**	0.82 (0.42-1.61)	76 (13.4%)	0.73 (0.47-1.12)	0.93 (0.58-1.50)
4+ Parks	133 (24.5%)	48 (23.1%)	**0.54 (0.32-0.90)**	1.00 (ref)	130 (22.9%)	0.70 (0.48-1.03)	1.00 (ref)
Total	542 (100.0%)	208 (100.0%)	**Ptrend=0.02**	Ptrend=0.26	567 (100.0%)	Ptrend=0.09	Ptrend=0.27

[1] Adjusted for age (continuous), race, and clustering by block group.

[2] Adjusted for age (continuous), race, family history of prostate cancer (no, yes, unknown), benign prostatic hyperplasia (no, yes, unknown), prostatitis (no, yes, unknown), number of Prostate-Specific Antigen (PSA) Test in recent 5 years (0, 1-2, 3-4, 5+, unknown), body mass index (<25, 25-29, 30+, unknown), population density quartile, gamma quartile , total business count quartile, crowding, residential mobility, traffic density, restaurant environment Index, parks, and clustering by block group.

Table 10. Adjusted odds ratios (OR) and 95% confidence intervals (CI) for associations of case-level education and neighborhood SES with risk of localized prostate cancer, Northern California, 1997-2000

SES Measures	Control	Localized Case	Models with Education, Neighborhood SES, or Education x Neighborhood SES				
			Base Model[1]	Base Model + Medical History + Behavioral Factor[2]	Model 2 + Neighborhood Model[3] (population density, crowding , residential mobility)	Model 2 + Neighborhood Model[4] (gamma quartile, total business, traffic density, restaurant environment Index, park)	Model 5 + All Neighborhood Factors[5]
	N (%)	N (%)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
MODEL 1							
Education							
<=High school graduate	122 (22.5%)	68 (32.7%)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Some college	163 (30.1%)	55 (26.4%)	0.78 (0.50-1.21)	0.74 (0.46-1.19)	0.72 (0.45-1.15)	0.72 (0.44-1.17)	0.72 (0.44-1.17)
College graduate	257 (47.4%)	85 (40.9%)	0.93 (0.60-1.42)	0.82 (0.52-1.30)	0.66 (0.41-1.07)	0.75 (0.47-1.22)	0.64 (0.39-1.07)
Total	542 (100.0%)	208 (100.0%)	Ptrend=0.85	Ptrend=0.50	Ptrend=0.11	Ptrend=0.31	Ptrend=0.10
MODEL 2							
Neighborhood SES							
Q1-Q2, low SES	66 (12.2%)	28 (13.5%)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Q3	75 (13.8%)	27 (13.0%)	1.44 (0.74-2.80)	1.22 (0.62-2.39)	1.21 (0.59-2.48)	1.27 (0.62-2.60)	1.24 (0.59-2.63)
Q4	135 (24.9%)	50 (24.0%)	**1.86 (1.01-3.45)**	1.54 (0.81-2.92)	1.40 (0.70-2.81)	1.69 (0.85-3.37)	1.57 (0.74-3.32)
Q5, high SES	266 (49.1%)	103 (49.5%)	**2.46 (1.35-4.49)**	**1.95 (1.05-3.63)**	1.39 (0.63-3.04)	**2.12 (1.05-4.31)**	1.69 (0.73-3.93)
Total	542 (100.0%)	208 (100.0%)	**Ptrend<0.01**	**Ptrend=0.01**	Ptrend=0.37	**Ptrend=0.02**	Ptrend=0.19

Table 10 (cont'd).

SES Measures	Control	Localized Case	Models with Education, Neighborhood SES, or Education x Neighborhood SES				
			Base Model[1]	Base Model + Medical History + Behavioral Factor[2]	Model 2 + Neighborhood Model[3] (population density, crowding , residential mobility)	Model 2 + Neighborhood Model[4] (gamma quartile, total business, traffic density, restaurant environment Index, park)	Model 5 + All Neighborhood Factors[5]
	N (%)	N (%)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
MODEL 3							
Education							
<=High school graduate	122 (22.5%)	68 (32.7%)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Some college	163 (30.1%)	55 (26.4%)	0.73 (0.47-1.13)	0.71 (0.44-1.13)	0.70 (0.44-1.13)	0.69 (0.42-1.12)	0.69 (0.42-1.13)
College graduate	257 (47.4%)	85 (40.9%)	0.75 (0.48-1.18)	0.69 (0.43-1.13)	0.63 (0.38-1.04)	0.64 (0.39-1.06)	**0.60 (0.36-1.00)**
Total	542 (100.0%)	208 (100.0%)	Ptrend=0.25	Ptrend=0.17	Ptrend=0.08	Ptrend=0.10	Ptrend=0.06
Neighborhood SES							
Q1-Q2, low SES	66 (12.2%)	28 (13.5%)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Q3	75 (13.8%)	27 (13.0%)	1.47 (0.76-2.86)	1.25 (0.63-2.47)	1.26 (0.61-2.59)	1.31 (0.64-2.71)	1.29 (0.60-2.76)
Q4	135 (24.9%)	50 (24.0%)	**1.93 (1.03-3.61)**	1.60 (0.83-3.09)	1.49 (0.73-3.04)	1.79 (0.88-3.63)	1.70 (0.79-3.65)
Q5, high SES	266 (49.1%)	103 (49.5%)	**2.66 (1.42-4.98)**	**2.15 (1.11-4.18)**	1.59 (0.71-3.59)	**2.40 (1.14-5.05)**	1.98 (0.83-4.72)
Total	542 (100.0%)	208 (100.0%)	**Ptrend<0.01**	**Ptrend<0.01**	Ptrend=0.21	**Ptrend<0.01**	Ptrend=0.09
MODEL 4							
< =High School, Q1-Q4 nSES	186 (34.3%)	82 (39.4%)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
< =High School, Q5 nSES	99 (18.3%)	41 (19.7%)	1.48 (0.91-2.41)	1.39 (0.82-2.35)	1.04 (0.57-1.87)	1.40 (0.79-2.47)	1.15 (0.62-2.14)
Some College+, Q1-Q4 nSES	90 (16.6%)	23 (11.1%)	0.88 (0.49-1.56)	0.82 (0.45-1.49)	0.75 (0.41-1.38)	0.78 (0.42-1.43)	0.72 (0.38-1.35)
Some College+, Q5 nSES	167 (30.8%)	62 (29.8%)	1.49 (0.95-2.33)	1.30 (0.81-2.10)	0.86 (0.48-1.55)	1.25 (0.74-2.10)	0.93 (0.50-1.73)
Total	542 (100.0%)	208 (100.0%)					

Models 1 & 2: Education and neighborhood SES in separate models; neighborhood SES based on block-group SES index based on 7 Census 2000 variables (Yost et al., Cancer Causes Control 2001), quintiles based on state distribution

Model 2: Education and neighborhood SES in the same model

Model 3: Combination term modeling joint association of education and neighborhood SES; low neighborhood SES = quintile 1-4, high neighborhood SES = quintile 5

Table 11. Adjusted odds ratios (OR) and 95% confidence intervals (CI) for associations of case-level education and neighborhood SES with risk of advanced prostate cancer, Northern California, 1997-2000

SES Measures	Control	Advanced Case	Models with Education, Neighborhood SES, or Education x Neighborhood SES				
			Base Model[1]	Base Model + Medical History + Behavioral Factor[5]	Model 2 + Neighborhood Model[3] (population density, crowding , residential mobility)	Model 2 + Neighborhood Model[4] (gamma quartile, total business, traffic density, restaurant environment Index, park)	Model 5 + All Neighborhood Factors[10]
	N (%)	N (%)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
MODEL 1							
Education							
<=Hsgrad	122 (22.5%)	149 (26.3%)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Some college	163 (30.1%)	152 (26.8%)	0.77 (0.55-1.07)	0.73 (0.51-1.04)	0.72 (0.50-1.04)	0.70 (0.49-1.01)	0.72 (0.50-1.04)
College graduate	257 (47.4%)	266 (46.9%)	0.89 (0.65-1.21)	0.87 (0.62-1.21)	0.76 (0.53-1.07)	0.81 (0.57-1.14)	0.73 (0.51-1.05)
Total	542 (100.0%)	567 (100.0%)	Ptrend=0.61	Ptrend=0.57	Ptrend=0.16	Ptrend=0.34	Ptrend=0.12
MODEL 2							
Neighborhood SES (State Quintile)							
Q1-Q2, low SES	66 (12.2%)	55 (9.7%)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Q3	75 (13.8%)	59 (10.4%)	1.22 (0.73-2.05)	1.08 (0.63-1.87)	1.08 (0.62-1.90)	1.08 (0.61-1.91)	1.09 (0.61-1.96)
Q4	135 (24.9%)	107 (18.9%)	1.34 (0.82-2.20)	1.14 (0.68-1.90)	1.15 (0.66-2.00)	1.16 (0.68-1.98)	1.17 (0.66-2.08)
Q5, high SES	266 (49.1%)	346 (61.0%)	**2.39 (1.50-3.82)**	**2.06 (1.26-3.35)**	**1.92 (1.06-3.46)**	**2.11 (1.23-3.60)**	**2.01 (1.08-3.77)**
Total	542 (100.0%)	567 (100.0%)	**Ptrend<0.01**	**Ptrend<0.01**	**Ptrend=0.01**	**Ptrend<0.01**	**Ptrend=0.01**

Table 11 (cont'd).

SES Measures	Control	Advanced Case	Models with Education, Neighborhood SES, or Education x Neighborhood SES				
			Base Model[1]	Base Model + Medical History + Behavioral Factor[5]	Model 2 + Neighborhood Model[3] (population density, crowding , residential mobility)	Model 2 + Neighborhood Model[4] (gamma quartile, total business, traffic density, restaurant environment Index, park)	Model 5 + All Neighborhood Factors[10]
	N (%)	N (%)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
MODEL 3							
Education							
<=Hsgrad	122 (22.5%)	149 (26.3%)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Some college	163 (30.1%)	152 (26.8%)	**0.71 (0.50-1.00)**	**0.68 (0.47-0.98)**	**0.69 (0.47-0.99)**	**0.67 (0.46-0.98)**	**0.68 (0.47-0.99)**
College graduate	257 (47.4%)	266 (46.9%)	**0.68 (0.49-0.95)**	**0.69 (0.48-0.99)**	**0.67 (0.47-0.97)**	**0.67 (0.46-0.96)**	**0.65 (0.45-0.94)**
Total	542 (100.0%)	567 (100.0%)	**Ptrend=0.03**	Ptrend=0.06	**Ptrend=0.04**	**Ptrend=0.04**	**Ptrend=0.03**
Neighborhood SES (State Quintile)							
Q1-Q2, low SES	66 (12.2%)	55 (9.7%)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Q3	75 (13.8%)	59 (10.4%)	1.25 (0.74-2.10)	1.11 (0.64-1.93)	1.11 (0.63-1.97)	1.11 (0.62-1.97)	1.12 (0.62-2.03)
Q4	135 (24.9%)	107 (18.9%)	1.41 (0.86-2.33)	1.19 (0.71-2.01)	1.21 (0.69-2.13)	1.21 (0.70-2.10)	1.24 (0.69-2.24)
Q5, high SES	266 (49.1%)	346 (61.0%)	**2.67 (1.64-4.35)**	**2.26 (1.35-3.78)**	**2.13 (1.15-3.94)**	**2.32 (1.32-4.07)**	**2.27 (1.18-4.35)**
Total	542 (100.0%)	567 (100.0%)	**Ptrend<0.01**	**Ptrend<0.01**	**Ptrend<0.01**	**Ptrend<0.01**	**Ptrend<0.01**
MODEL 4							
Education & Neighborhood SES							
< =High School, Q1-Q4 nSES	186 (34.3%)	174 (30.7%)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
< =High School, Q5 nSES	99 (18.3%)	127 (22.4%)	**1.61 (1.13-2.30)**	**1.49 (1.01-2.20)**	1.40 (0.90-2.17)	**1.51 (1.01-2.27)**	1.46 (0.93-2.30)
Some College+, Q1-Q4 nSES	90 (16.6%)	47 (8.3%)	**0.62 (0.41-0.95)**	**0.60 (0.39-0.95)**	**0.60 (0.38-0.96)**	**0.59 (0.37-0.94)**	**0.59 (0.37-0.95)**
Some College+, Q5 nSES	167 (30.8%)	219 (38.6%)	**1.66 (1.21-2.29)**	**1.64 (1.17-2.30)**	1.46 (0.97-2.20)	**1.63 (1.13-2.34)**	1.47 (0.97-2.23)
Total	542 (100.0%)	567 (100.0%)					

Footnote for Tables 10 & 11:

[1] Adjusted for age (continuous), race (White, Black) and clustering effect of census block group.

[2] Adjusted for age (continuous), race (White, Black), family history of prostate cancer (no, yes, unknown), benign prostatic hyperplasia (no, yes, unknown), prostatitis (no, yes, unknown), number of Prostate-Specific Antigen (PSA) Test in recent 5 years (0, 1-2, 3-4, 5+, unknown), body mass index (<25, 25-29, 30+, unknown) and clustering effect of census block group.

[3] Adjusted for age (continuous), race (White, Black), family history of prostate cancer (no, yes, unknown), benign prostatic hyperplasia (no, yes, unknown), prostatitis (no, yes, unknown), number of Prostate-Specific Antigen (PSA) Test in recent 5 years (0, 1-2, 3-4, 5+, unknown), body mass index (<25, 25-29, 30+, unknown), population density (quartile 1, quartile 2, quartile3, quartile4), crowding (quartile 1, quartile 2, quartile3, quartile4) , residential mobility (quartile 1, quartile 2, quartile3, quartile4) , and clustering effect of census block group.

[4] Adjusted for age (continuous), race (White, Black), family history of prostate cancer (no, yes, unknown), benign prostatic hyperplasia (no, yes, unknown), prostatitis (no, yes, unknown), number of Prostate-Specific Antigen (PSA) Test in recent 5 years (0, 1-2, 3-4, 5+, unknown), body mass index (<25, 25-29, 30+, unknown), gamma quartile (quartile 1, quartile 2, quartile3, quartile4), total business count quartile(quartile 1, quartile 2, quartile3, quartile4), traffic density (quartile 1, quartile 2, quartile3, quartile4) , restaurant environment Index (0, tertile 1, tertile 2, tertile 3), park(0, tertile 1, tertile 2, tertile 3) and clustering effect of census block group.

[5] Adjusted for age (continuous), race (White, Black), family history of prostate cancer (no, yes, unknown), benign prostatic hyperplasia (no, yes, unknown), prostatitis (no, yes, unknown), number of Prostate-Specific Antigen (PSA) Test in recent 5 years (0, 1-2, 3-4, 5+, unknown), body mass index (<25, 25-29, 30+, unknown), population density quartile (quartile 1, quartile 2, quartile3, quartile4), gamma quartile (quartile 1, quartile 2, quartile3, quartile4), total business count quartile(quartile 1, quartile 2, quartile3, quartile4), crowding (quartile 1, quartile 2, quartile3, quartile4) , residential mobility (quartile 1, quartile 2, quartile3, quartile4) , traffic density (quartile 1, quartile 2, quartile3, quartile4) , restaurant environment Index (0, tertile 1, tertile 2, tertile 3), park(0, tertile 1, tertile 2, tertile 3) and clustering effect of census block group.